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ABSTRACT

Progressive competencies were identified for gifted students in grades kindergarten through 12 as a result of a survey of over 600 administrators, classroom teachers, and teachers of the gifted. Competencies were identified for four levels of development in the following six specific skill areas: creativity, affective development, academic management, research, critical thinking, and the psychomotor domain. A section on each skill area begins with a review of the literature, continues with a listing of the competencies for subskills, and ends with a bibligrraphy. Under "Creativity," competencies are listed for writing, speech and drama, art, divergent thinking skills, and creative problem-solving. Competencies identified for "Affective Development" include the subareas of self-image, group dynamics, leadership, and career exploitation. The section on "Academic Management" includes competencies for critical reading, nonverbal communication, verbal communication, listening, test awareness and time management. Included in the "Research" section are competencies for the election and planning process, information retrieval, recording and analyzing information, and the presentation of research. Competencies for the following subskills are included in the section on "Critical Thinking": analogy, deductive reasoning, propaganda and persuasive techniques, decision making, inductive reasoning--figural and numberic, inductive reasoning--verbal and symbolic, and causal relationships The final section, "Psychomotor Domain," contains examples from the Guilford and Harrow taxonomies. (DB)

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Selected Progressive Competencies for Education of the Gifted

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INTRODUCTION

Emporia State University Emporia, Kansas funded a research project which surveyed over 600 administrators, classroom teachers, and teachers of the gifted to ascertain attitudes toward education, and curriculum for the gifted. Research findings indicated an imperative need for progressive competencies in six specific skill areas:

Creativity

Affective development

Academic management

Research

Critical thinking

Psychomotor domain

All competenices follow levels of development as students progress from Kindergarten through grade twelve. Students may progress through the 4 levels at a rate commensurate with their individual ability. A hierarchy of skills is not intended in any area and users are entrusted with the responsibility of individualizing instruction for all students.

APPRECIATION is extended to the following people in education of the gifted that contributed significantly to the research and authored significant portions of the original document.

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CREATIVITY

Creative or divergent thinking is a purposive act which results in the production of unique and elaborate ideas which are novel to the creator. These ideas may then be communicated in an intelligible form for self or society.

Creative production involves the person, the product, and the process. Creative people display a variety of internal and external characteristics such as:

Self-confidence
Ability to produce original solutions
Independence
High energy level
Curiousity
Reflective analysis
Tolerance of ambiguity
Playful improvisation
Aesthetic and Artistic inclination
Willingness to take risks
Uninhibited expression of opinion
Fluency
Wittiness
Fresh perception

Leaders of business and industry indicate that one of the greatest needs in those fields is the development of confident, creatively talented, employees. According to the Rockefeller Brothers Report on THE PURSUIT OF EXCELLENCE, creative talent was listed as one of our greatest national resources. One aspect of creative production includes the artistic expression of ideas. Rogers (1959) recognized this type of creativity as action emerging from a novel, rational product generated from uniqueness of the individual, on one hand, and the materials, events, people, or circumstances of his life on the other.

Divergent thinking involves producing a diversity of responses or solutions to a single idea, question, or stimulus. This high level thinking

skill is distinguished from convergent thinking (zeroing in on one correct answer) in that divergent thinking requires searching for a variety of loosely related ideas. It is important in teaching this skill to communicate to students that there is seldom "one correct answer." All answers must be accepted and all thinking honored as long as the student can identify the connection between the stimulus and his/her response. Novelty and uniqueness are encouraged.

Research supports the theory that development of divergent thinking skills can be taught. This thinking skill should be incorporated into subject matter course work so that mastery and understanding of concepts are combined with original thinking. When many experiences are provided to stimulate divergent thought in the classroom, self-confidence, curiosity, and enthusiasm for learning are fostered. Students have opportunities to ask questions, explore alternatives, and respond with original ideas without having a value judgment placed upon them.

Peer influence is a critical factor in the development of creativity or divergent thinking. In grades two through six, peer group influence can work for or against the creative child, therefore, creative production needs to be encouraged and valued for all children. Osborn (1963) stated every individual with the capacity to think has the potential to think creatively. Teachers have an opportunity to stimulate and encourage creativity and thus help children develop an appreciation for creative talent.

Several theorists have endeavored to identify the components of the divergent thinking process, and a comparison of their theories reveals considerable overlapping in components identified. Williams, Treffinger, Guilford, and Khatena have designed models which identify the components of the divergent thinking process.

Williams's (1970) model for creative thinking divides pupil behaviors into two categories: (1) The Cognitive behaviors of Fluency, Flexibility, Originality, and Elaboration; and (2) The Affective behaviors of Curiosity, Risk Taking, Complexity, and Imagination. These eight behaviors may be fostered through any of eighteen different teaching strategies identified by Williams, and they apply across the curriculum to Art, Music, Science, Social Studies, Arithmetic and Language Arts.

Treffinger's (1980) Level I Divergent Functions, from his Model for Creative Learning, is very similar to Williams's Cognitive and Affective Pupil Behaviors. Treffinger adds Cognition and Memory to the Cognitive functions, and divides the Affective functions into Curiosity, Willingness to Respond, Openness to Experience, Risk Taking, Problem Sensitivity, Tolerance for Ambiguity, and Self-Confidence.

Although Khatena's (1978) work focuses on creative imagination, he too emphasizes divergent thinking skills. His teaching strategies encourage quantity of responses (fluency), unusual and different quality of responses (flexibility and originality), and adding detail to make complex images (elaboration). In stimulating creative imagination, the teacher should be continually alert to show appreciation for unusual and original responses. Khatena's strategies for stimulating use of creative imagery and analogy include breaking from the usual, restructuring, and synthesis.

Like many of the creativity theorists, Guilford (1967) identifies the divergent functions of fluency, flexibility, originality, and elaboration. In addition, he includes foresight as one of the creativity skills. In his Structure-of-Intellect model, Guildford identified three dimensions of intellectual functioning: Content, Products, and Operations. Divergent Production is one of the five intellectual Operations. Divergent thinking is defined as

"the generation of information from given information where the emphasis is upon variety and quality of output from the same source" (Meeker, 1969, 20).

Creative Problem Solving is a basic skill process which approaches a problem in an imaginative way and results in effective action (Noller, 1977). The Creative Problem Solving (CPS) process provides a practical plan for guiding the social and academic growth of children, while motivating them to grow intellectually and cope with situations that have no definite solutions.

PROGRESSIVE COMPETENCIES FOR CREATIVITY

Students with exceptional abilities may need instruction in a variety of divergent thinking or creative production techniques. The following progression of skills may be developed through various teaching strategies in order to foster creative expression through writing, speech, drama, and art.

	1st Level	2nd Level	3rd Level	4th Level
WRITING				
Communicate thoughts in complete sentences.	X	X	X	X
Prepare and present ideas in logical form and sequence.	X	X	X	X
Organize sentences and paragraphs to develop a topic.	X	X	X	X
Apply rules of grammar.	X	X	X	X
Use the elements of sentence structure involving kinds of subjects, predicates, and determiners of a simple sentence.	X	X	X	X
Identify and use correct verb forms and subject-verb agreement.	X	X	X	X
Correctly use of common and proper nouns and personal and indefinite pronouns.	X	X	X	X

	1st Level	2nd Level	3rd Level	4th Level
Identify and use punctuation (period, question marks, capital letters, and commas).	X	X	X	X
Use descriptive words and phrases in creating short stories and poetry.		X	X	X
Demonstrate skill in developing and writing short stories which include at least three related events.		X	X	X
Use simile, metaphor, personification, alliteration, effective verb usage, mood, setting, characterization, descriptive narration, dialogue, and plot.			X	X
Demonstrate functional skill in writing free verse, limerick, couplet, triplet, quatrain, haiku, tanka, and cinquain.		X	X	X
Use various forms and techniques in expository writing.			X	X
Prepare and present a written argument.		X	X	X
Understand style differences in written material.			X	X
Use dialogue to develop characterization.		X	X	X
Use specific emotion, understatement, conflict, verb density, tone, setting, and mood in descriptive writing.		X	X	X
Use techniques of effective drama (soliloquy, aside, dialogue, visual clues to set the scene, articulation of scenes, and suspense) in writings.			X	X
Perceive components and relationship using techniques of literary criticism.			X	X

	1st Level	2nd Level	3rd Level	4th Level
SPEECH AND DRAMA				
Present ideas orally.	X	X	X	X
Present descriptions of personal experiences.	X	X	X	X
Make informal oral presentations.	X	X	X	X
Participate in group discussions.	X	X	X	X
Present ideas effectively to an audience.		X	X	X
Participate in achieving the goals of a discussion group.	X	X	X	X
Apply proper techniques for leading a discussion.		X	X	X
Prepare a speech to entertain, inform, or persuade.			X	X
Use voicing techniques.		X	X	X
Demonstrate skill in eliciting audience response.		X	X	X
Show skill in panel discussion roles (speaker, moderator, evaluator)		X	X	X
Dramatize ideas, emotions, and characters.		X	X	X
Demonstrate knowledge of guidelines for participating in a play.	X	X	X	X
Present choral readings.	X	X	X	
Present an oral interpretation of a memorized poem or story.	X	X	X	
Use effective body action and gesture.		X	X	X
Plan and conduct personal interviews.	X	X	X	X
Introduce a speaker.		X	X	X
Demonstrate debate procedures by participating in debate.		X	X	X

	1st Level	2nd Level	3rd Level	4th Level
ART				
Demonstrate knowledge of the primary colors.	X	X	X	
Mix and use secondary colors.	X	X	X	
Recognize and use the basic shapes: circle, oval, square, rectangle, cylinder, cone, triangle, ameboid (freeform).	X	X	X	
Use knowledge that all objects are derived from one or more of the basic shapes.	X	X	X	
Use concepts of perspective.			X	X
Demonstrate good composition and design.			X	X
Use knowledge of texture, engraving, weaving, stitchery, printing, photography, etc.		X	X	X
Appreciate the artistic perceptions and interpretations of other individuals.	X	X	X	X
Appreciate the ideas that inspire self art expression and that of others.	X	X	X	X
Recognize the interaction of art and society.		X	X	X

DIVERGENT THINKING SKILLS

The development of divergent thinking skills is beneficial to all students, but imperative for gifted students. Competencies selected from models such as Williams, Treffinger, Khatena, Guilford, and Osborn follow:

	1st Level	2nd Level	3rd Level	4th Level
Fluency - responding with quantity.				
Identify traits or attributes.	X	X	X	X
List similarities or differences.	X	X	X	X
List a quantity of words fulfilling specific requirements.	X	X	X	X

	1st Level	2nd Level	3rd Level	4th Level
Generate many relationships for a given idea using similes, metaphors, synonyms, antonyms, or associated words.		X	X	X
List possible questions to ask.		X	X	X
Name consequences or outcomes.		X	X	X
List ways for improvement.	X	X	X	X
Draw many pictures using a given shape.	X	X		
Brainstorm ideas to solve a problem.			X	X
Flexibility - utilizing a variety of ideas and changes.				
List different uses of a common item.		X	X	X
Find similarities in two or more unlike phenomena.		X	X	X
Express abstract ideas or concepts in visual or verbal form (onomatopoea).		X	X	X
Describe an experience using all the senses.	X	X	X	X
Modify or alter a given object to fit a new specification or requirement.		X	X	X
Use a given basic shape to draw unusual images which break away from the confines of the given shape.	X	X	X	X
Form an unusual mental image of a stimulus word (onomatopoea) or sound and describe his/her image to others.	X	X	X	X
Recommend alternatives to commonly accepted methods.	X	X	X	X
Envision or contemplate things that have never been or may never happen.	X	X	X	X
Group and regroup elements in various ways.		X	X	X

	1st Level	2nd Level	3rd Level	4th Level
Originality - producing unique and clever ideas.				
Create something new from common-place components.	X	X	X	X
Create an original ending to a story.	X	X		
Restructure a story altering one or more of the following: plot, setting, characters, theme.		X	X	X
Express an idea in a unique visual form.	X	X	X	X
Recommend a novel approach to solve a problem.		X	X	X
Create unusual analogies (personal, direct, symbolic, and fantasy).		X	X	X
Compare unlike things using original similies and metaphors.		X	X	X
The students will produce symbolic codes or equations using letters, numbers, etc.	X	X	X	X
Elaboration - expanding ideas through details or embellishment.				
Expand upon ideas generated by self and others.	X	X	X	X
Use detailed imagery in creative writing and speaking.		X	X	X
Add details to basic figures or drawings.	X	X	X	X
Embellish attitudes in role playing situations.	X	X	X	X
Embellish intuitive feelings, thoughts, and ideas.	X	X	X	X
Develop projects beyond specific requirements through self-directed learning.	X	X	X	X

	1st Level	2nd Level	3rd Level	4th Level
Risk Taking - exposing oneself to failure by taking a guess or functioning without structure.				
Express ideas to peers.	X	X	X	X
Defend ideas to peers.	X	X	X	X
Demonstrate courage to express ideas to adults and persons of authority.		X	X	X
Defend ideas to adults and persons of authority.		X	X	X
Expose self to criticism from others.	X	X	X	X
Establish a structure.		X	X	X
Accept the challenge to delve into intricate or complicated problems or ideas.	X	X	X	X
Follow a hunch just to see what the outcome will be.	X	X	X	X

CREATIVE PROBLEM SOLVING

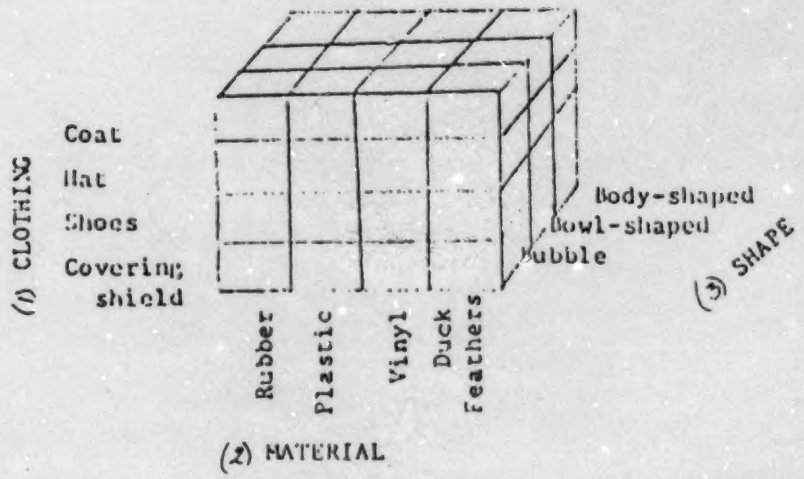
Creative Problem Solving begins with a "mess" or a situation which we wish to change, and progresses through five interrelated steps to the "action" which resolves the situation. The five CPS steps are: (1) Fact Finding; (2) Problem Finding; (3) Idea Finding; (4) Solution Finding; and (5) Acceptance Finding. Emphasis is upon searching for a variety of alternatives at each step and deferring judgment of those alternatives until the time for choosing arrives. By deferring judgment and encouraging fluent, flexible, and original ideas, this process helps students to become more open to their own ideas and ideas of others, more flexible in their thinking, and more aware of themselves and other people, things, and situations around them.

	1st Level	2nd Level	3rd Level	4th Level
Sensing Problems				
Seek out and identify situations and conditions which could be improved.	X	X	X	X
State why each situation needs improvement (as opposed to fault finding).	X	X	X	X
Demonstrate the realization that points-of-view and differences of opinion are sources of problems.	X	X	X	X
Fact Finding				
Formulate relevant questions to ask in an effort to gather facts about the "mess" (who, why, what, when, where, how).	X	X	X	X
Search out answers to fact finding questions	X	X	X	X
Make observations about the situation based on data gathered by all of the senses.	X	X	X	X
Use imagination in posing further fact-finding questions.	X	X	X	X
Problem Finding				
Make a statement of the general problem.	X	X	X	X
List a quantity of possible sub-problems or related problems.		X	X	X
Demonstrate flexible thinking by stating possible problems from different points of view.		X	X	X
Demonstrate sequential thinking by listing sub-steps to a goal, task, or problem situation.		X	X	X
State the problems in the form: In what way might I?		X	X	X
Redefine the problem.		X	X	X

	1st Level	2nd Level	3rd Level	4th Level
Choose the problem which best defines the challenge of the situation.		X	X	X
Idea Finding				
Brainstorming:				
Participate in a group session to listideas for problem solution.	X	X	X	X
Defer judgement of ideas presented.	X	X	X	X
Express any idea which comes to mind. The wilder the idea the better.	X	X	X	X
List a large quantity of ideas.	X	X	X	X
Build on the ideas of others by improving combining or modifying the ideas.	X	X	X	X
Use Checklists:				
Stretch imagination to break from habitual thought patterns.	X	X	X	X
Use a checklist of questions to stimulate idea production such as formulated by Osborn and Eberle.	X	X	X	X
Use Attribute Listing:				
List as many major and minor attributes of the situation as possible.	X	X	X	X
Suggest a quantity of ideas for changing each attribute listed.	X	X	X	X
Use Forced Relationships:				
Related the problem to something that happened in nature, and use the relationship to produce solution ideas.		X	X	X
Express ideas which result from looking at the situation through another person's or object's "eyes".		X	X	X

	1st Level	2nd Level	3rd Level	4th Level
Relate the situation to another event in history or current events and produce solution ideas based on the relationship.			X	X
Relate the situation to other fields of study (construction, architecture, mathematics, government, science, etc.) and express ideas resulting from such comparisons.			X	X
Force relationships between characteristics of the situation and qualities sensed (such as odors, textures, flavors) to produce ideas.	X	X	X	X
Use Morphological Analysis:				
Identify the components of three dimensions to the problem: (1) Independent variables or components; (2) Characteristics or attributes of each variable; and (3) Ideas for improvement.			X	X
Force relationships between the components of each dimension to produce new ideas.			X	X

Example: Ways to keep dry in the rain.



	1st Level	2nd Level	3rd Level	4th Level
Solution Finding				
Subjectively select at least six ideas which are most appropriate.		X	X	X
List criteria for judging the solution ideas.		X	X	X
Determine the value of an idea based on the evaluation criteria.		X	X	X
Objectively select the best idea based on the evaluation criteria.		X	X	X
Record data to support the final idea choice.		X	X	X
Demonstrate willingness to make a decision.		X	X	X
Acceptance Finding				
Elaborate on, further develop, and polish the solution idea.		X	X	X
Make a detailed plan for implementing the solution.		X	X	X
Gather data through observation and testing to support the implementation of a solution.			X	X
Anticipate criticisms and difficulties you might encounter in "selling" the solution idea.			X	X
Devise a plan for "selling" the idea to authorities and the public. Such as: show a need for the solution. make recommendations for implementation. make an appeal for action.			X	X
Defend solution.			X	X

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AFFECTIVE DEVELOPMENT

The affective domain has been defined as those aspects of human behavior that involve feelings, emotions, awareness of self and others, and interpersonal relationships. Major categories have been organized. These major categories can be systematically addressed through the following areas: self image, group dynamics, leader-ship, and career exploration. Characteristics which enable gifted students to profit from educational programs in the affective domain include:

> Perception of subliminal messages without the necessary cognitive basis for processing and coping
> Unusual sensitivity to the expectations and feelings of others
> Heightened self-awareness accompanied by feelings of being "different"
> Idealism and a sense of justice which appear at an early age
> Early development of an inner locus of control
> Advanced levels of moral reasoning
> High expectations of self and others
> Unusual emotional depth and intensity
> Sensitivity to inconsistency between ideals and behavior (Clark, 1979, 173)

Discussion of values and morals have been carefully avoided by educators in the past due to sanctions expressed by the public. By concentrating on how the student makes value decisions, rather than the conclusion reached, educators can address affective development without taking a position on potentially controversial issues. Through discussions and activities in the areas of self image, group dynamics, leadership, and career exploration, students develop a basic for making intelligent judgments by concentrating on techniques for judging value statements and recognizing propaganda and persuasion tactics.

The concept of self has been defined as "the complex and dynamic system of beliefs which individuals hold to be true about themselves." These beliefs determine an individual's actions and his perception of the world and others. Through growth of self esteem, self actualization becomes possible. Various social-emotional characteristics of gifted students may impair the development

of self esteem and hamper positive relationships with others. (Maslow, 1970)

Gifted children often have unusually high self-expectations. Perfectionism can result in a great deal of pressure and frustration for the individual. In addition, this attitude of perfectionism may interfere with interpersonal relationships if the gifted individual bases the worth of others upon their ability to meet unrealistically high standards.

Lack of specific recognition from adults and peers may result in lowered self esteem for the gifted student. In many cases, high quality performance becomes routinely expected of the gifted, and appreciation for quality work is infrequently expressed. Therefore, it is difficult for the gifted individual to realistically assess performance.

In the absence of appropriate guidance, gifted students may resort to one of the following undesirable patterns of coping:

1. Withdrawal or isolation from the group/refusal to participate: This behavior most often occurs when the individual feels misunderstood or ignored, when the situation offers no challenge, or when the student fears disapproval from significant others.

2. Attention getting devices: Some students may resort to showing off in an effort to gain acceptance. They are often viewed as a nuisance by teachers and peers.

3. Attempting to be the perfect person: Individuals may attempt to meet the values of teachers, parents, and peers even though these values often differ from their own.

Educational opportunities should be provided which allow the gifted child to accept himself and others, to appreciate the similarities and differences between himself and his peers, and to value each individual as a unique person. All gifted students need the opportunity to interact with their intellectual peers. When they are placed with intellectual peers, one of the factors favorable to learning is the powerful force of group dynamics. In such a peer group, students watch and listen to each other; they are alternately pleased and displeased with themselves as they compare their own situation, perform-

ance, thoughts, understanding and knowledge with that of others. Handled correctly, both these emotions--pleasure and displeasure--are motivating factors. The presence of others who are at the same level of sophistication and ability, can serve to quicken each student's pursuit of knowledge and his acquisition of new ideas. Interaction among gifted students affords them an opporutnity to use group dynamics in satisfying psychological needs for success, status, acceptance, self-esteem, and independence. Training in group dynamics can be specific. Activities and discussions which develop effective skills of group interaction will help students learn how to become effective members of a group.

Leadership is a set of skills possessed by an individual that enables him or her to guide a group in the accomplishment of its goals. Society needs leaders that are innovative, abstract conceptualizers. It is mandatory that we educate the potential leaders in, not only decision making and problem solving, but in the ability to communicate as well. Gifted students require opportunities to examine a varity of leadership styles and to practice leadership skills with the guidance of adult and peer models.

Gifted students frequently have multiple talents and interests which make a career decision difficult; exploration of potential careers is therefore imperative. Rapidly changing technology and increased life expectancy affect the potential careers of today's students. Singular interests areas may lead to the lack of other career considerations by students. In addition limitations may be imposed due to high expectations of self and others. Career seeking women and minorities may also be confronted with a different set of problems or concerns. Career exploration, encompassing the phases of awareness, searching, researching and preparation will assist in the development of successful, self-sufficient, self-actualizing individuals capable of making important contributions to society.

PROGRESSIVE COMPETENCIES FOR AFFECTIVE

	1st Level	2nd Level	3rd Level	4th Level
SELF IMAGE				
Demonstrate awareness of friends and favorite things.	X	X		
Define terms such as values and justice.	X	X	X	X
Extend awareness of self toward freedom, life and honesty.		X	X	X
Identify values and preferences for self.	X	X	X	X
Consider implications of things one values.			X	X
Identify expectations and aspirations for self and others.		X	X	X
Discuss rewards and coats of excellence and high standards.		X	X	X
Identify inconsistencies in self and peers.		X	X	X
Anticipate conflicts with associates.			X	X
Acknowledge varied expectations.	X	X	X	X
Explore methods of self expression (drama, art, music, sports, speaking, body language).	X	X	X	X
Recognize causes for conflicts with associates.		X	X	X
Identify feelings (stress, joy, sorrow, etc.).	X	X	X	X
Identify emotions experienced in role playing activities and their causes.	X	X	X	X
Demonstrate awareness of options.	X	X	X	X
Draw comparisons between role playing situations and real life.	X	X	X	X

	1st Level	2nd Level	3rd Level	4th Level
Take action regarding things one values.		X	X	X
Recognize ones motivation and purpose for action			X	X
Justify decisions made.	X	X	X	X
Plan strategies to deal with pressure and identify peer pressure.		X	X	X
Assess performance of self.		X	X	X
GROUP DYNAMICS				
Interact with intellectual peers in a positive manner.	X	X	X	X
Listen and respond to different viewpoints.		X	X	X
Distinguish between various roles observed in a group.			X	X
Role play alternative positions in a group.			X	X
LEADERSHIP				
Define leaderships.		X	X	X
Investigate varied leadership styles and characteristics.		X	X	X
Read body language and verbal cues.			X	X
Identify strengths and weaknesses of group participants.			X	X
Empathize with group participants.			X	X
Role play leadership skills.			X	X
Demonstrate positive thinking and analyze its effect on self and others.			X	X
Identify emotions experienced in role playing activities and their causes.	X	X	X	X

	1st Level	2nd Level	3rd Level	4th Level
Practice accepting and giving compliments, criticism and appreciation in a positive manner.	X	X	X	X
Demonstrate ability to take a supporting role.			X	X
Establish goals.		X	X	X
Plan for projects.		X	X	X
Delegate responsibility.			X	X
CAREER EXPLORATION				
Define careers	X	X		
Assess self strengths and interests.		X	X	
Evaluate differing levels of expectations and aspirations.			X	X
Investigate varied career options.			X	X
Explore personal goals.		X	X	X
Match multiple talents and goals.		X	X	X
Explore careers including trasitionally sex-oriented.	X	X	X	X
Consider multiple career.			X	X
Prepare for varied career choices.			X	X
Use card catalog and retrieve references.	X	X	X	X
Locate and use tables of content, index, glossary, list of illustration, maps, etc.	X	X	X	X

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ACADEMIC MANAGEMENT

Being identified as intellectually gifted means the student has the potential to achieve. However, achievement of that potential is not guaranteed. Academic management includes all those general strategies which help the student reach a level of school success commensurate with his abilities. Academic management addresses all curriculum areas. These strategies may be appropriate to any or all subjects.

Techniques of academic management may develop more slowly in the gifted since success has often come with little effort in various areas. As the student progresses in school and his involvements become more numerous, academic management becomes acutely critical.

In education, the development of academic management strategies is often taken for granted and not deliberately taught. Because gifted students are likely to encounter the types of challenges that necessitate adept use of academic management, it should be included in the gifted curriculum so that these students may more fully realize their potential.

Major categories that are included in this document include critical reading, communication, test awareness, and time management.

Reading skills are mastered early and/or quickly by most gifted students. As such, there are generally no additional barriers that need to be surmounted in the area of decoding skills. However, to assume that further attention to reading is unnecessary ignores what may even be a more important reading strategy, critical reading.

Students need to be constantly aware of the purpose for their reading and select the reading style that most efficiently accomplishes that purpose. For example, the student would select a different style for reading for pleasure than for reading for test preparation. Other critical reading strategies in-

clude skimming, reading for details, detecting faulty reasoning and propaganda techniques, and analyzing authors' intentions and credentials. In turn, the student must apply these critical reading skills to his own writing in order to maintain that same objectivity.

Gifted students are producers of knowledge as well as consumers of knowledge. Even the most creative ideas and brilliant research can lose value if ineffectively communicated. Finding ways to best demonstrate knowledge is a key element in the education of gifted children. Students need to use their talents and find other vehicles besides the written report to demonstrate their knowledge, e.g. photography, art, drama, public speaking. All forms of oral and written communication need to be explored and practiced to develop the students' competencies in a variety of presentation styles. The presentation style must be determined by the student based on the particular audience, the desired effect, and his own personal strengths and weaknesses.

Communication involves being a receiver as well as a sender of information. Students should be aware of the significant part played by nonverbal forms of communication. Because gifted students are more "visible" and subject to more criticism than the average student, their body language may enhance or diminish the acceptability of their communication according to the perceptions of others. In addition, gifted students can perceive and use information communicated by the body language of others.

A listener, as the receiver of oral communication, must develop techniques suited to the specific purpose of the situation. Productive listening techniques can be enhanced through awareness, training, and practice. This skill is important in everything from following directions, through lecture notetaking to interpersonal relationships.

Gifted students need guidance in developing all communication skills so

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Gifted students need guidance in developing all communication skills so

they can effectively relate to people in their environment and adapt appropriately to changes. In addition, the effective management of communication techniques will enhance their potential as true producers of knowledge.

All students should be encouraged to understand the need and purpose for tests and be aware of how test results are used. They should learn general rules and specific strategies for taking tests such as study or relaxation techniques.

Gifted students may have unique problems in this area. Work and tests in their earlier school years may have been so easy for these students that they failed to develop good study habits. This may first be apparant when they are confronted with more challenging tests at the secondary or college level. Another problem is that they often choose an answer that is different from the "right" answer because they sometimes see relationships that others do not.

Different types of tests require different kinds of preparation. Related areas of concern include test anxiety, poor concentration, reading directions carelessly, overconfidence, perfectionism, and unrealistic expectations for themselves.

Time management is important to scholastic and personal success. Gifted students often have many interests and sometimes become involved in so many pursuits that increased demands are placed on their time. Students need to analyze their current use of time, establish their priorities within existing confines, and preferences, and adjust their time schedules accordingly.

Due to the complexity and open-endedness in topics researched by the gifted, the potential exists for nonclosure of projects. In addition, if there is a lack of time or loss of interest, the project may not be completed as originally planned. However, gifted students must become aware of the need for closure to reinforce the value of reaching goals, self-fulfillment, sense

of accomplishment, and task committment. Good use of time management techniques assists the student in setting realistic goals which will aid in developing a holistic approach to life.

PROGRESSIVE COMPETENCIES for ACADEMICS MANAGEMENT

	1st Level	2nd Level	3rd Level	4th Level
CRITICAL READING				
Identify the purpose (pleasure, general information, specific details, retention) and select the appropriate reading technique.		X	X	X
Recognize propaganda techniques		X	X	X
Recognize literal and non-literal meanings.			X	X
Recognize faulty reasoning		X	X	X
Recognize cause and effect relationships.		X	X	X
Differentiate between fact and opinion		X	X	X
Determine author's point of view			X	X
Analyze author's credentials				X
Proofread materials		X	X	X
NONVERBAL COMMUNICATION				
Recognize the importance of eye contact.	X	X	X	X
Analyze reasons for lack of eye contact between sender(s) and receiver(s).		X	X	X
Understand the meaning and significance of various types of eye movements (staring, blinding, flicking to left or right, up or down, pupil dilation).			X	X

	1st Level	2nd Level	3rd Level	4th Level
Determine the appropriate distance (intimate, personal, social, public) between people in a particular setting.		X	X	X
Develop strategies for managing inappropriate proximic stances.			X	X
Be aware of the body movements, gestures, and facial expressions that project confidance, insecurity, and aggression.		X	X	X
Analyze personal body movements, gestures, and facial expressions.		X	X	X
VERBAL COMMUNICATION				
Be aware of how voice tone and pitch affect the meaning of the message communicated.			X	X
Analyze the climate, preparation, and level of formality for various forms of oral communication (interview, impromptu, formal, and informal speeches, story-telling.			X	X
Be aware of the effect different communication styles have upon the interpretation of the message in creative writing, editorials, short stories, plays, essays, poetry, etc.			X	X
Demonstrate use of appropriate communication styles.		X	X	X
LISTENING				
Follow oral directions.	X	X	X	X
Recall specific information.	X	X	X	X

	1st Level	2nd Level	3rd Level	4th Level
Summarize data	X	X	X	X
Recognize content and techniques.		X	X	X
Interpret content.			X	X
Critique speaker using criteria			X	X
TEST AWARENESS				
Identify the purpose for tests.	X	X	X	X
Be aware of how test results are used.	X	X	X	X
Interpret test results.			X	X
Explore various study techniques used to prepare for essay, short answer, and objective test questions.		X	X	X
Match study skills to type of test questions.			X	X
TIME MANAGEMENT				
Demonstrate awareness of time increments.	X			
Set goals - long and short term.	X	X	X	X
Determine priorities.		X	X	X
Plan within a time frame		X	X	X
Adjust time schedule		X	X	X

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RESEARCH

Basic to the process of learning is the ability to effectively research a topic. Students with a need for information must be taught the skills necessary for them to locate and utilize that information. Teachers of intellectually gifted students must make a concerted effort to provide appropriate research skills for their students. This may be approached by either a concentrated skills program and/or taught in conjunction with a student's individual project. Research can be divided into four basic categories---historical, experimental design, descriptive and developmental.

The objective reconstruction of the past best describes historical research. Resources for information can be deeds, written records, oral accounts, old newspapers, etc. Examples of this type are neighborhood histories or histories of a community.

Developmental research concerns changes, patterns, trends, sequence, continuity, etc., and usually involves people. Changes can be observed over an extended period of time or within a brief time frame. This is a valuable tool for investigating growth rates of specified age groups, determining whether practice will improve skills, for studying the effects of environmental variables or intrinsic variables and the interaction of these two sources of influence.

Experimental research (Also known as Scientific Research) must meet three criteria: objectivity, testability and explanation. In other words, events must be observable and they must be measurable. Empirical conclusions require that theories be tested to prove or disprove validity. Behavior is explained by identifying determinants at the same level of analysis. Determinants are psychological events, including historical, situational, and intrinsic factors. The value of a hypothetical construct is its ability to improve prediction and

control of behavior.

Descriptive research is frequently characterized by simple observational techniques which sometimes involve the collection of very large amounts of data which frequently are conducted in non-laboratory settings. The distinguishing feature of this method is that the researcher simply observes and records things as seen. Potentially determining variables are identified in the natural setting and then carefully scrutinized and tested in the laboratory.

It would be important for the student to understand the type and requirements of research he has chosen to undertake. These skills are necessary for the student to effectively obtain information and present completed process, product or project to others.

Students, all too often are not aware of where to locate information on topics of concern to them. The old line "I looked in the encyclopedia and couldn't find anything about it" has all too often ended research projects far short of their potential. A special effort should be put forth by teachers of the intellectually gifted to acquaint their students with resources beyond the encyclopedia and school library. Students should be acquainted with the resources of major public and university libraries. For specific topics students should be made aware of private libraries, documents from a legal library, collections in museums, private collections, etc. Government offices may prove to be a valuable source of researching information; a county courthouse may hold a wealth of historical and financial data, federal agencies have many publications and research data, government officials are generally helpful about providing resources. Letter writing and phone calls can be particularly useful in locating materials not available through other sources.

Training must be provided to help students develop good research techniques. Even if a student knows where information may be obtained they may

not be knowledgeable about how to obtain it. Instructions should be provided to give students skills: i.e., interviewing skills, note taking, indexing, computer searches, and the distinctions between primary and secondary sources, etc.

The teaching of these techniques can be handled with specific research topics conducted by students, taught as a research segment and/or used in conjunction with activities in the affective domain, critical thinking, and academic management.

PROGRESSIVE COMPETENCIES: RESEARCH SKILLS

For students with exceptional abilities, research is a tool used to become independent learners. Research skills provide the autonomy needed to increase the productivity within the classroom environment. The recommended levels at which intellectually gifted students develop and use specific research skills would generally follow a progression involving the selection process, information retrieval, recording and analyzing information, and presentation of research.

	1st Level	2nd Level	3rd Level	4th Level
SELECTION AND PLANNING PROCESS				
Select topic (choose & limit)	X	X	X	X
Formulate open ended question	X	X	X	X
Determine type of material & techniques needed for research.	X	X	X	X
Develop scholarly criteria to evaluate project.			X	X
Develop contracts			X	X

	1st Level	2nd Level	3rd Level	4th Level
INFORMATION RETRIEVAL				
Use simple non-fiction books.	X			
Identify parts of a book.	X			
Alphabetize words, numbers, names, and abbreviations.	X			
Demonstrate awareness of library resources: Atlas, periodicals, card catalog, chart, almanac, dictionary, maps, graphs.	X			
Demonstrate awareness of microfilm, microfiche, audio visual materials, etc.	X			
Interpret Dewey Decimal numbers of nonfiction books.	X	X	X	X
Interpret call numbers of fiction books.	X	X	X	X
Locate pertinent information from title page, copyright, appendix, bibliography, forward, perface, introduction, and dedication.	X	X	X	X
Use library personnel properly.	X	X	X	X
Locate and interpret information in dictionaries: Phonetic Spelling, definitions, parts of speech, stymologies, geographical and biographical information, and rules of grammar and punctuation.	X	X	X	X
Locate and interpret information in an encyclopedia: charts, graphs, diagrams, maps, and headings.	X	X	X	X
Locate and interpret information in a thesaurus.	X	X	X	X

	1st Level	2nd Level	3rd Level	4th Level
Utilize directory to locate specific information and contact resource people.	X	X	X	X
Use atlas to locate specific information.	X	X	X	X
Use almanac to locate specific information.		X	X	X
Gather information from newspapers.	X	X	X	X
Use special dictionaries and reference books: biographical and geographical dictionaries, Guinness Book of World Records, Poetry index, quotations, etc.		X	X	X
Locate articles by using reader's guides.		X	X	X
Select up-to-date, relevant sources and information.		X	X	X
Verify information gathered by locating supporting evidence: other sources which agree, author's qualification, documentation.			X	X
Conduct interviews.	X	X	X	X
Write letters of inquiry.	X	X	X	X
Observe and gather information from panel discussions, debates, and lectures.		X	X	X
Conduct surveys and polls.		X	X	X
Gather information from private libraries, museums, government documents, field trips, etc.		X	X	X
Use computer searcher such as ERIC.			X	X

	1st Level	2nd Level	3rd Level	4th Level
RECORDING AND ANALYZING INFORMATION				
Express main idea in own words.	X	X		
Begin note-taking.	X	X		
Use sketches as a method of note-taking.	X	X		
Accumulate simple data.	X	X		
Create and run computer programs to analyze data.		X	X	X
Demonstrate graphic interpretive skills.	X	X	X	X
Devise and conduct scientific experiment to draw conclusions.		X	X	X
Conduct statistical tests on data gathered.			X	X
Utilize graphic display of data: chart, graphs, diagrams, etc.	X	X	X	X
Organize notes into introduction, development, and summarization of topic.	X	X	X	X
Outline information utilizing information from primary and secondary sources.	X	X	X	X
PRESENTATION OF RESEARCH				
Utilize information in a written product: plays, poems, reports.	X	X	X	X
Write bibliographies.		X	X	X
Develop research papers.			X	X
Make use of alternative ways to share information oral presentation, slide-tape, video tape, collections, panel discussions, etc.	X	X	X	X

	1st Level	2nd Level	3rd Level	4th Level
Plan for a specific audience.		X	X	X
Generate responsible questions and comments pertinent to presentations.	X	X	X	X
Demonstrate poise and confidence while presenting research and answering questions.	X	X	X	X
Evaluate presentation voice level, eye contact, poise, preparation, audience response.	X	X	X	X

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CRITICAL THINKING

Critical thinking may be defined as the searching out, analyzing, evaluating, and testing of information to establish its validity, truth, and usability. Critical thinking is essential in problem-solving, decision-making, and information processing. The necessity for reasoning, precise thoughts and problem solving are acute in any endeavor. Therefore, it is vital for the education of gifted children.

Basic to all critical thinking is the analysis of component parts. In formulating analogies students analyze concepts and their features from varied perspectives in order to identify interrelationships. This skill is later incorporated into more complex decision-making processes.

In deductive reasoning, logical conclusions necessarily follow from given premises. Deductive reasoning is required in most academic subjects and is a component of problem analysis.

Modern society bombards individuals continually with messages of propaganda and persuasion. These suggestive messages are designed to convince and may be composed of truthful, biased, or twisted argument. It is essential that students learn to identify the techniques with which they are confronted, so that they can make wise decisions. In addition, appropriate and positive use of persuasion techniques can be productive when students are in leadership roles.

Decision making is the act of dealing with a preference for action. Decision making ability is basic to daily life and personal interaction. Effective daily "coping" requires decision making skills. Assuming that gifted students will move into leadership positions it is crucial that they aquire skills in critical thinking. Real decision making is not deciding between two predetermined objectives or circumstances, but rather careful

evaluation of previously gathered data to make a preferred judgment. This characteristic places decision making as an adjunct to research and inquiry skills. The step by step processes involved in decision making are also practical corallaries to problem solving and logical thinking.

Inductive reasoning is a synthesis process in which conclusions are drawn from incomplete banks of data, examples, or situations, and extrapolations are made. Inductive reasoning is an integral part of all problem solving; patterns and rules must be extracted from problem situations, and then ideas can be generated.

The examination of facts and evidence may lead students to infer causal relationships. It is essential to be able to distinguish between facts, opinions, and influences when examining arguments for substantiation.

PROGRESSIVE COMPETENCIES for CRITICAL THINKING

	1st Level	2nd Level	3rd Level	4th Level
ANALOGY				
Identify several different items and determine what they have in common.	X	X	X	X
Identify several different processes and determine what they have in common.	X	X	X	X
Compile lists of antonyms for a given number of words and use them in context (such as places, activities, things, professions, feelings, etc.).	X	X	X	X
Compile lists of synonyms for a given number of words and use them in context (such as places, activities, things, professional, feelings, etc.).	X	X	X	X
Classify given facts or information under specific categories		X	X	X
Create literal analogies.		X	X	
Identify use of inappropriate analogies.		X	X	

	1st Level	2nd Level	3rd Level	4th Level
DEDUCTIVE REASONING				
Draw logical conclusions based on given facts.	X	X	X	X
Solve two dimensional problems.	X	X		
Solve three and four-dimensional problems.			X	X
Identify and formulate general statements.		X	X	X
Refute general statements with counter examples.		X	X	X
Identify quantifiers (such as some, all, most every, never).		X	X	X
Determine the effect quantifiers have on the meaning of a statement		X	X	X
Recognize faulty of erroneous deductive reasoning.			X	X
Identify various forms of syllogisms and rewrite in symbolic form (if, then, or, and, if and only if).		X	X	X
Determine validity of each component thought and the entire statment.		X	X	X
Determine the validity of propositions, converse, inverse and contrapositive statements.		X	X	X
Identify and create arguments in which the premise leads logically to the conclusions		X	X	X
PROPAGANDA AND PERSUASIVE TECHNIQUES				
Differentiate between statements of fact and opinion.	X	X	X	X
Determine when opinions are stated by unqualified sources or without valid supporting evidence.		X	X	X

	1st Level	2nd Level	3rd Level	4th Level
Identify irrelvant or unrelated examples, fact or information used as evidence.	X	X	X	X
Determine when an inadequate quantity or quality of facts are given to support a conclusion.	X	X	X	X
Identify the use of irrelevant or inappropriate statistics or statistical techniques.			X	X
Identify and utilize ambiguous statements in the presentation of evidence.		X	X	X
Recognize propoganda techniques such as: glittering generalities, transfer, testimonials, or band wagon techniques.				X
Structure statements that exemplify reluctant and irrelevant information and use each to support a viewpoint.			X	X
Predict an opposing argument and refute before it is presented.				X
Present appropriate examples of diversion statements or techniques.			X	
Create a tactical diversion in which the opponent is drawn into an emotional response.				X
Create examples of irrational or emotional statements that may deliberately cloud the issue.		X	X	
DECISION MAKING				
Identify decision to be formulated.	X	X	X	X
List possible alternatives.	X	X	X	X
Explore possible effects of values and past experiences.		X	X	X
Recognize possible limitations.		X	X	X
Apply existing data.		X	X	X

	1st Level	2nd Level	3rd Level	4th Level
Develop criteria for evaluation of alternatives.		X	X	X
Prioritize possible options.		X	X	X
Objectively select the best option based on the evaluation criteria.		X	X	X
Evaluate and defend the decision based on the evaluation criteria.			X	X
Assess the effects of the decision on others.			X	X
INDUCTIVE REASONING - FIGURAL AND NUMERIC				
Recognize relationships between and among different figures.	X	X	X	X
Organize data into a recognizable pattern.	X	X	X	X
Determine whether all data fits the pattern	X	X	X	X
Determine whether additional information is needed to find the pattern.	X	X	X	X
Extend the pattern with additional data	X	X	X	X
INDUCTIVE REASONING - VERBAL AND SYMBOLIC				
Determine whether the premise given is reasonable.	X	X	X	X
Determine whether or not additional information is needed.		X	X	X
Recognize diversionary information.			X	X
Distinguish between statements actually made and personal interpretation.		X	X	X
Make inferences based on given premises.	X	X	X	X
Determine whether a given inference is logical		X	X	X

	1st Level	2nd Level	3rd Level	4th Level
CAUSAL RELATIONSHIPS				
Verify evidence or data which indicates a causal relationship.		X	X	X
Justify a statement of causal relationship by collecting sufficient data or evidence.		X	X	X
Determine existance of evidence which contradicts a statement of cause and effect.			X	X
Distinguish between inferences and facts used to support a statement of cause and effect.			X	X
Utilize examples of faulty connections to negate cause and effect.			X	X
Examine arguments to substantiate causal relationships.			X	X

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Psychomotor Domain

The psychomotor area continues to be considered by many as a component of the overall definition relating to abilities of gifted individuals. Psychomotor abilities have been defined in various ways since early efforts by Guilford in 1958, Harrow in 1972, and Saphier in 1973. There is general agreement that psychomotor abilities combine functions of body and mind. In addition there is evidence that the psychomotor talent area is so diversified that it is difficult to define, identify and facilitate. Guilford and Saphier organized psychomotor into a kind of system rather than actually formulating a formal definition. (see table 1) Harrow defined specific psychomotor abilities, yet also utilizes a system approach for classification of the general psychomotor domain (see table 2 & 3).

TABLE 1

Matrix of the psychomotor factors, with columns for kinds of abilities and with rows for parts of the body involved

Part of body involved	Type of ability						
	Strength	Impulsion	Speed	Static precision	Dynamic precision	Coordination	Flexibility
Gross	General strength	General reaction time		Static balance	Dynamic balance	Gross body coordination	
Trunk	Trunk strength						Trunk flexibility
Limbs	Limb strength	Limb thrust	Arm speed	Arm steadiness	Arm aiming		Leg flexibility
Hand		Tapping			Hand aiming	Hand dexterity	
Finger			Finger speed			Finger dexterity	

Source: Guilford

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A general definition for psychomotor ability would include components in three areas: (1) Overt physical movement; (2) Perceptual discrimination; (3) Mind set. Physical movement such as flexibility, strength, and coordination of specific body parts separately and/or in unison is typically addressed in physical education. Varied aspects of perceptual discrimination such as kinesthetic, visual, auditory, or tactile abilities are incorporated into regular curricular and extra-curricular areas. Mind set refers to the integration of intellectual abilities and physical skills. The development of body and mind integration may be accomplished through noncompetitive physical activities and ultimately should provide a source of personal pleasure.

TABLE 2

A Taxonomy of the Psychomotor Domain

1.00 Reflex Movements
- 1.10 Segmental Reflexes
- 1.20 Intersegmental Reflexes
- 1.30 Suprasegmental Reflexes

2.00 Basic-Fundamental Movements
- 2.10 Locomotor Movements
- 2.20 Non-Locomotor Movements
- 2.30 Manipulative Movements

3.00 Perceptual Abilities
- 3.10 Kinesthetic Discrimination
- 3.20 Visual Discrimination
- 3.30 Auditory Discrimination
- 3.40 Tactile Discrimination
- 3.50 Coordinated Abilities

4.00 Physical Abilities
- 4.10 Endurance
- 4.20 Strength
- 4.30 Flexibility
- 4.40 Agility

5.00 Skilled Movements
- 5.10 Simple Adaptive Skill
- 5.20 Compound Adaptive Skill
- 5.30 Complex Adaptive Skill

6.00 Non-Discursive Communication
- 6.10 Expressive Movement
- 6.20 Interpretive Movement

Source: Harrow

Since an operational definition of each area of psychomotor development utilizing manual dexterity has not been adequately developed, there are no instruments that can effectively measure psychomotor ability in a general sense (Khatena, 1982). The accomplishment of that task must precede the development of competencies in the diverse area of psychomotor performance.

Selected references follow that may be utilized in the eventual development of progressive competencies for the psychomotor domain.

Table 3

Ragsdale	*Simpson*	*Kibler, et al.*
NON-TAXONOMIC	TAXONOMIC	NON-TAXONOMIC
1. Object Motor (manipulating or acting with direct reference to an object)	1. Perception (interpreting)	1. Gross Body Movements (locomotor and axile)
2. Language Motor (movements of speech, sight, handwriting)	2. Set (preparing)	2. Finely Coordinated (manipulation and visual motor coordination)
3. Feeling Motor (movements communicating feelings and attitudes)	3. Guided Response (learning)	3. Non-Verbal (communicating feelings and attitude)
	4. Mechanism (habituating)	4. Speech Behaviors
	5. Complex Overt Response (performing)	
	6. Adaptation (modifying)	
	7. Origination (creating)	

Source: Harrow

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